APPARATUS AND METHODS FOR MANAGING PACKETS IN A BROADBAND
DATA STREAM

ABSTRACT OF THE INVENTION

An exemplary method for writing packets in a data stream comprises the steps of dividing a packet into long packet cells and short packet cells, storing the long packet cells in a set of long cell queues and the short packet cells in a set of short cell queues, selectively pairing a long packet cell in one of the set of long cell queues with a short packet cell in one of the set of short cell queues to obtain an optimized pair of packet cells at each write cycle, and sequentially writing the optimized pair of packet cells at each write cycle to a set of memory banks. An exemplary method for reading packets in a data stream comprises the steps of receiving long cell requests and short cell requests, storing the long cell requests in a set of long cell request queues, storing the short cell requests in a set of short cell request queues, selectively pairing a long cell request in one of the set of long cell request queues and a short cell request in one of the set of short cell request queues to obtain an optimized pair of cell requests at each read cycle, retrieving packet cells corresponding to the optimized pair of cell requests from a set of memory banks at each read cycle, reordering the packet cells in a first data buffer, and sending the packet cells in a sequential order.